

L Number	Hits	Search Text	DB	Time stamp
1	896	((two or three or four or five) near4 layers) same (surfactant or tenside or surfactants or tensides)	USPAT; US-PGPUB; EPO; JPO; DERWENT; IBM_TDB	2003/09/03 10:19
2	147	((((two or three or four or five) near4 layers) same (surfactant or tenside or surfactants or tensides)) and (isotropic or (colored near3 layer) or ((bottom adj layer) same electrolyte\$2) or shaken or shaking or shake) .	USPAT; US-PGPUB; EPO; JPO; DERWENT; IBM_TDB	2003/09/03 10:11
3	23	(((((two or three or four or five) near4 layers) same (surfactant or tenside or surfactants or tensides)) and (isotropic or (colored near3 layer) or ((bottom adj layer) same electrolyte\$2) or shaken or shaking or shake)) and (laundry or textile or dishwash or dishwashing)	USPAT; US-PGPUB; EPO; JPO; DERWENT; IBM_TDB	2003/09/03 10:14
4	7	(((((two or three or four or five) near4 layers) same (surfactant or tenside or surfactants or tensides)) and (shake or shaking or shakes) and (510/\$.ccls.)) not (emulsion or microemulsion).ti,ab,clm.	USPAT; US-PGPUB; EPO; JPO; DERWENT; IBM_TDB	2003/09/03 10:20
5	5	((("4635722") or ("4439345") or ("4337159") or ("4125156") or ("3718609")).PN.	USPAT	2003/09/03 10:17
6	21	((((two or three or four or five) near4 layers) same (surfactant or tenside or surfactants or tensides)) and hydrotrope	USPAT; US-PGPUB; EPO; JPO; DERWENT; IBM_TDB	2003/09/03 10:17
7	3424	((upper or lower or two or three or four or five) near4 (layers or phase or phases)) same (surfactant or tenside or surfactants or tensides)	USPAT; US-PGPUB; EPO; JPO; DERWENT; IBM_TDB	2003/09/03 10:26
8	36	(((((upper or lower or two or three or four or five) near4 (layers or phase or phases)) same (surfactant or tenside or surfactants or tensides)) and (shake or shaking or shakes) and (510/\$.ccls.)) not (emulsion or microemulsion).ti,ab,clm.	USPAT; US-PGPUB; EPO; JPO; DERWENT; IBM_TDB	2003/09/03 10:20
10	6	((("6177396") or ("4530781") or ("4125156") or ("3718609") or ("6180587")).PN.) and (dye or colorant or pigment or hydrotrope or (third near3 layer) or (transparent) or electrolyte)	USPAT; US-PGPUB; EPO; JPO; DERWENT; IBM_TDB	2003/09/03 10:43
11	3477	((bottom or upper or lower or two or three or four or five) near4 (layers or phase or phases)) same (surfactant or tenside or surfactants or tensides)	USPAT; US-PGPUB; EPO; JPO; DERWENT; IBM_TDB	2003/09/03 10:26
12	159	((bottom or upper or lower or two or three or four or five) near4 (layers or phase or phases)) same (surfactant or tenside or surfactants or tensides)) and laundry and 510/\$.ccls.	USPAT; US-PGPUB; EPO; JPO; DERWENT; IBM_TDB	2003/09/03 10:27
9	13	((("6177396") or ("4530781") or ("4125156") or ("3718609") or ("6180587")).PN.	USPAT; US-PGPUB; EPO; JPO; DERWENT; IBM_TDB	2003/09/03 10:44
13	3432	((("6177396") or ("4530781") or ("4125156") or ("3718609") or ("6180587")).PN.) or (((upper or lower or two or three or four or five) near4 (layers or phase or phases)) same (surfactant or tenside or surfactants or tensides))	USPAT; US-PGPUB; EPO; JPO; DERWENT; IBM_TDB	2003/09/03 10:32

14	5	((("6177396") or ("4530781") or ("4125156") or ("3718609") or ("6180587")).PN.) and (((upper or lower or two or three or four or five) near4 (layers or phase or phases)) same (surfactant or tenside or surfactants or tensides))	USPAT; US-PGPUB; EPO; JPO; DERWENT; IBM_TDB	2003/09/03 10:32
15	2	hsu.in. and kwang.in. and laundry.ti.	USPAT; US-PGPUB; EPO; JPO; DERWENT; IBM_TDB	2003/09/03 10:43
16	50	((("4655954") or ("4661280") or ("5124066") or ("5500151") or ("4886615") or ("5814592") or ("6187734") or ("4622173") or ("6376446") or ("4333862") or ("5205960") or ("4618446") or ("5290475") or ("4436637") or ("5397493") or ("4659497") or ("4793943") or ("4931195") or ("4326979") or ("4549977") or ("3968058") or ("5198353") or ("4018720") or ("4259217") or ("5536436") or ("4318818") or ("5073286") or ("4871467") or ("4515704") or ("5728667") or ("4316812") or ("4264466") or ("5466802") or ("6451064") or ("4507219") or ("4537706") or ("4537707") or ("5710121") or ("4058489") or ("5130828") or ("5304323") or ("6592637") or ("4640713") or ("6132743") or ("6299736") or ("4634509") or ("5324442") or ("3882038") or ("3850831") or ("3630929")).PN.	USPAT	2003/09/03 12:45
17	10	((("4655954") or ("4661280") or ("5124066") or ("5500151") or ("4886615") or ("5814592") or ("6187734") or ("4622173") or ("6376446") or ("4333862") or ("5205960") or ("4618446") or ("5290475") or ("4436637") or ("5397493") or ("4659497") or ("4793943") or ("4931195") or ("4326979") or ("4549977") or ("3968058") or ("5198353") or ("4018720") or ("4259217") or ("5536436") or ("4318818") or ("5073286") or ("4871467") or ("4515704") or ("5728667") or ("4316812") or ("4264466") or ("5466802") or ("6451064") or ("4507219") or ("4537706") or ("4537707") or ("5710121") or ("4058489") or ("5130828") or ("5304323") or ("6592637") or ("4640713") or ("6132743") or ("6299736") or ("4634509") or ("5324442") or ("3882038") or ("3850831") or ("3630929")).PN.) and (((bottom or upper or lower or two or three or four or five) near4 (layers or phase or phases)) same (surfactant or tenside or surfactants or tensides))	USPAT; US-PGPUB; EPO; JPO; DERWENT; IBM_TDB	2003/09/03 12:27
18	4	((("6521581") or ("5962387")).PN.	USPAT; US-PGPUB; EPO; JPO; DERWENT; IBM_TDB	2003/09/03 12:28
19	25	((("6362156") or ("6136776") or ("6133214") or ("6124036") or ("6037319") or ("5783541") or ("5429874") or ("5384364") or ("5316688") or ("5234615") or ("5160654") or ("5110640") or ("4973416") or ("4972017") or ("4844828") or ("4776455") or ("4610799") or ("4416791") or ("4348293") or ("4348292") or ("4286016") or ("4115292") or ("3322674") or ("3277009") or ("2580683")).PN.	USPAT	2003/09/03 13:54
20	1	(((bottom or upper or lower or two or three or four or five) near4 (layers or phase or phases)) same (surfactant or tenside or surfactants or tensides)) and (((("6362156") or ("6136776") or ("6133214") or ("6124036") or ("6037319") or ("5783541") or ("5429874") or ("5384364") or ("5316688") or ("5234615") or ("5160654") or ("5110640") or ("4973416") or ("4972017") or ("4844828") or ("4776455") or ("4610799") or ("4416791") or ("4348293") or ("4348292") or ("4286016") or ("4115292") or ("3322674") or ("3277009") or ("2580683")).PN.)	USPAT; US-PGPUB; EPO; JPO; DERWENT; IBM_TDB	2003/09/03 12:32
21	275350	((third or three) near4 (layer or layers or phase or phases))	USPAT; US-PGPUB; EPO; JPO; DERWENT; IBM_TDB	2003/09/03 12:37

22	541	((third or three) near4 (layer or layers or phase or phases))) and 510/\$.ccls.	USPAT; US-PGPUB; EPO; JPO; DERWENT; IBM_TDB	2003/09/03 12:35
23	243	((third or three) near4 (layer or layers or phase or phases))) and 510/\$.ccls.) and laundry	USPAT; US-PGPUB; EPO; JPO; DERWENT; IBM_TDB	2003/09/03 12:35
24	312	((third or three) near4 (layer or layers or phase or phases) near4 (clay or clays or smectite))	USPAT; US-PGPUB; EPO; JPO; DERWENT; IBM_TDB	2003/09/03 12:37
25	460	((third or three) near4 (layer or layers or phase or phases))) and 510/\$.ccls.) not ((third or three) near4 (layer or layers or phase or phases) near4 (clay or clays or smectite)))	USPAT; US-PGPUB; EPO; JPO; DERWENT; IBM_TDB	2003/09/03 12:38
26	251	((third or three) near4 (layer or layers or phase or phases))) and 510/\$.ccls.) not ((third or three) near4 (layer or layers or phase or phases) near4 (clay or clays or smectite))) and (liquid or aqueous).ti,ab,clm.	USPAT; US-PGPUB; EPO; JPO; DERWENT; IBM_TDB	2003/09/03 12:38
28	12	((("6521581") or ("5962387") or ("4753750") or ("6362156") or ("5124066") or ("4738804") or ("4292219") or ("4493773") or ("4259217") or ("6503876") or ("4749516") or ("4913828") or ("6429177") or ("5958858") or ("H000269") or ("4770815") or ("5710121") or ("4240920") or ("6384008") or ("4530781") or ("4828750") or ("6090762") or ("4793943") or ("4878951") or ("6525012") or ("5985809") or ("6464856") or ("4430243") or ("6420333") or ("5922671") or ("6486112") or ("5076954") or ("5075026") or ("5252245") or ("5082584") or ("5108643") or ("4913832") or ("5922631") or ("5954991") or ("5932772") or ("4734259") or ("5948321") or ("6086780") or ("4437949") or ("4637899") or ("4510095") or ("3882038") or ("4472291") or ("3532634") or ("3156654")).PN.) and (((bottom or upper or lower or two or three or four or five) near4 (layers or phase or phases)) same (surfactant or tenside or surfactants or tensides))	USPAT; US-PGPUB; EPO; JPO; DERWENT; IBM_TDB	2003/09/03 12:45
30	0	((("6429177") or ("4749516") or ("4257909") or ("4018720") or ("6521581") or ("6177396") or ("4530781") or ("4125156") or ("3718609") or ("6180587")).PN.) and hydrotope	USPAT; US-PGPUB; EPO; JPO; DERWENT; IBM_TDB	2003/09/03 12:54
31	1	((("6429177") or ("4749516") or ("4257909") or ("4018720") or ("6521581") or ("6177396") or ("4530781") or ("4125156") or ("3718609") or ("6180587")).PN.) and (xylene near3 sulfonate)	USPAT; US-PGPUB; EPO; JPO; DERWENT; IBM_TDB	2003/09/03 12:54
32	3	((("6429177") or ("4749516") or ("4257909") or ("4018720") or ("6521581") or ("6177396") or ("4530781") or ("4125156") or ("3718609") or ("6180587")).PN.) and hydrotrope	USPAT; US-PGPUB; EPO; JPO; DERWENT; IBM_TDB	2003/09/03 12:55
33	7	((("6429177") or ("4749516") or ("4257909") or ("4018720") or ("6521581") or ("6177396") or ("4530781") or ("4125156") or ("3718609") or ("6180587")).PN.) and (ethanol or isobutanol or isopropanol or isopropyl)	USPAT; US-PGPUB; EPO; JPO; DERWENT; IBM_TDB	2003/09/03 12:56
29	10	((("6429177") or ("4749516") or ("4257909") or ("4018720") or ("6521581") or ("6177396") or ("4530781") or ("4125156") or ("3718609") or ("6180587")).PN.	USPAT	2003/09/03 12:56

-----claim tree-----

1----2
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+-----9
+-----8
+-----7
+-----6
+-----4----5
+-----3

11----12
+-----15
+-----14
+-----13

16

-----112-----

claim# 16 contains the word -> prefer
claim# 16 contains the word -> such as
claim# 16 contains the word -> for example
claim# 16 contains the word -> type
claim# 16 contains the word -> relatively
claim# 16 contains the word -> as described
claim# 16 contains the word -> significant
claim# 16 contains the word -> especially
claim# 16 contains the word -> equivalent

-----best-----

6521581
5962387
4753750
6362156
5124066
4738804
4292219
4493773
4259217
6503876
4749516
4913828
6429177
5958858
H269
4770815
5710121
4240920
6384008
4530781
4828750
6090762
4793943
4878951
6525012
5985809
6464856
4430243
6420333
5922671
6486112
5076954
5075026
5252245
5082584
5108643
4913832
5922631
5954991
5932772
4734259

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5948321
6086780
4437949
4637899
4510095
3882038
4472291
3532634
3156654

-----classlist-----

510/506
510/417
510/321
510/418
510/338
510/337
510/424
510/349
510/108
510/467
510/340
510/351
510/304
8/137
510/220
510/509
510/325
510/495
510/407
510/535
252/6252
252/6254
510/438
252/6262
510/352
510/303
510/342
510/297
134/40
359/283
510/492
510/336
510/356
510/523
208/309
510/320
510/393
510/471
510/445
510/470
208/44
510/339
208/45
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208/42
510/422
510/427
510/284
510/296
510/365
510/449
510/238
359/280
510/302
510/109
510/343
359/281

-----keywords-----

dye nonionic surfactant hydrotape salting out electrolyte phase salt phase bottom salt phase bottom salt
layer electrolyte layer separate layer ratio neodol nonionic surfactant phase surfactant layer dishwashin

report10017203.txt

g laundry liquid laundry two phases two layers bottom phase lower phase upper phase top phase top layer 1 liquid upper layer bottom layer middle layer second layer third layer three layers hydrotrope unstable ins table separates shake requires shaking shaking shakes transparent electrolyte dissolve Ethoxylated Alcohol Sodium Ethoxylated Alcohol Ethoxylate Ethoxylate Sodium Xylene dispensed dimensions polystyrene polyethylene terephthalate terephthalate polyamides polyethylene polypropylene antifoam colorant polymers perfumes colorants enzymes powder organic surfactant molecule xylene sulfonate cumene sulphonate cumene xylene sulphonate xylene toluene sulphonate toluene benzene sulphonate urea ethanol propylene glycol hydrotropes liquid crystal non-polar virtue emulsification sodium hydroxide acidic dispers ion clarity formulation heated sodium borate sodium carbonate Sodium citrate calcium salts calcium magnesium lithium sodium potassium buffering builders triethanolamine diethanolamine monoethanolamine alkanolamines ammonium hydroxide hydroxide positively charged charged organic cation molecules concentrations anhydrous Cadmium Sulfide Cupric Chloride Nickel Acetate Ferric Nitrate Potassium Sulfate Ferric Sulfate Yellow Green succinate stearate silicate salicylate perborate oleate lactate hypochlorite formate citrate cinamate butyrate carbonate bicarbonate benzoate ammonium tartrate iodide bromide fluoride nitrate sulphate anions manganese zinc nickel copper soil particulate stain greasy optimum washing machines washing formulations foaming ether sulfate phosphonate phosphate heterocyclic ring quaternary ammonium quaternary disodium ethyl sulfate propionate aliphatic substituents substituents straight chain straight aliphatic radical tertiary amines amines tertiary heterocyclic derivatives synthetic detergent s Amphoteric Surfactants Amphoteric cationic surfactant Cationic Surfactants organic salt detergency Inorganic salt alkaline precursor neutralizing Industries ether sulfates alkyl ether methyl esters sulfo olefin sulfonates alpha olefin olefin Stepan Anionic surfactants alkylbenzene sulfonate alkylbenzene ethoxy sulfate alkoxy sulfates biodegradable potassium salt stearyl tri-

-----references-----

6521581

classes:1 510/297 1 510/296 1 510/337 1 510/340 1 510/343 1 510/438 1 510/523
score: 1131

keywords: dye;nonionic surfactant;salting out;electrolyte layer;separate;layer ratio;neodol;nonionic;surfactant layer;laundry;liquid laundry;two phases;two layers;top layer;liquid;second layer;third layer;hydrotrope;separates;shaking;transparent;electrolyte;dissolve;Ethoxylated Alcohol;Sodium Ethoxylated;Sodium Xylene;polyethylene;antifoam;polymers;powder;molecule;xylene sulfonate;cumene;xylene sulphonate;xylene;toluene;urea;propylene glycol;hydrotropes;liquid crystal;virtue;emulsification;acidic;dispersion;clarity;formulation;heated;sodium borate;sodium carbonate;Sodium citrate;calcium;magnesium;lithium;buffering;builders;monoethanolamine;charged;molecules;concentrations;anhydrous;Cadmium Sulfide;Cupric Chloride;Nickel Acetate;Ferric Nitrate;Potassium Sulfate;Ferric Sulfate;Yellow;Green;succinate;salicylate;formate;citrate;carbonate;bromide;fluoride;nitrate;anions;manganese;zinc;nickel;copper;soil;particulate;stain;greasy;optimum;washing;formulations;foaming;quaternary;disodium;aliphatic substituents;substituents;straight chain;straight;aliphatic radical;amines;tertiary;heterocyclic;derivatives;synthetic detergents;Cationic Surfactants;organic salt;alkaline;precursor;neutralizing;Industries;ether sulfates;alkyl ether;methyl esters;sulfo;olefin sulfonates;alpha olefin;olefin;Stepan;alkylbenzene sulfonate;alkylbenzene;ethoxy sulfate;alkoxy sulfates;biodegradable;potassium salt;stearyl;alkyl diethoxy;alkyl ethoxy;alcohol sulfate;sodium salt;ethoxylated sulfate;potassium salts;alkyl poly;ethoxy;sulfonate salt;alkyl sulfonate;sulfonated;chain alkyl;branched chain;alkyl substituent;substituent;dioxide;sulfur;hydrocarbons;paraffin;reacting;secondary alkyl;secondary;dodecyl benzene;dodecyl;benzene sulfonate;alkanolamide;fatty acid;alkyl polyether;polyether;alkyl sulfates;dissolve;Ethoxylated Alcohol;Sodium Ethoxylated;Sodium Xylene;polyethylene;antifoam;polymers;powder;molecule;xylene sulfonate;cumene;xylene sulphonate;xylene;toluene;urea;propylene glycol;hydrotropes;liquid crystal;virtue;emulsification;acidic;dispersion;clarity;formulation;heated;sodium borate;sodium carbonate;Sodium citrate;calcium;magnesium;lithium;buffering;builders;monoethanolamine;charged;molecules;concentrations;anhydrous;Cadmium Sulfide;Cupric Chloride;Nickel Acetate;Ferric Nitrate;Potassium Sulfate;Ferric Sulfate;Yellow;Green;succinate;salicylate;formate;

- surfactant component may include both highly polar and highly **non-polar** ingredients, which might separate into more than one organic-rich layer.

OPTIONAL INGREDIENTS

Hydrotrope

A particularly preferred optional ingredient is a hydrotrope, which prevents **liquid crystal** formation. The addition of the hydrotrope thus aids the **clarity**/transparency of the composition. The hydrotrope is typically included in the surfactant layer. Suitable **hydrotropes** include but are not limited to **propylene glycol**, **ethanol**, urea, salts of benzene sulphonate, **toluene sulphonate**, **xylene sulphonate** or **cumene sulphonate**. Suitable salts include but are not limited to sodium, potassium, ammonium, **monoethanolamine**, **triethanolamine**. Preferably, the hydrotrope is selected from the group consisting of **propylene glycol**, **xylene sulfonate**, **ethanol**, and urea to provide optimum performance. The amount of the hydrotrope is generally in the range of from 0 to 30%, preferably

5962387

classes:1 510/224 1 510/232 1 510/233 1 510/402 1 510/446 1 510/475 1 510/495 1 510/510 1 510/512
score: 769

keywords: dye;nonionic surfactant;neodol;nonionic;dishwashing;two layers;top layer;liquid;bottom layer;middle layer;third layer;hydrotrope;dissolve;Sodium Xylene;dispensed;polymers;powder;xylene sulfonate;cumene;xylene;sodium carbonate;Sodium citrate;builders;anhydrous;Green;silicate;citrate;carbonate;iodide;washing;foaming;phosphate;disodium;detergency;alkaline;ethoxy;metal salts;substituent;paraffin;secondary;fatty acid;dissolve;Sodium Xylene;dispensed;polymers;powder;xylene sulfonate;cumene;xylene;sodium carbonate;Sodium citrate;builders;anhydrous;Green;silicate;

- wo carboxyl groups located on the same polycarboxylic acid
molecule. The preferred carboxylic monomers for use in this invention are the monoolefinic acrylic acids having a substituent selected from the class consisting of hydrogen, halogen and hydroxyl groups, monovalent alkyl radicals, monovalent aryl radicals, monovalent aralkyl radicals, monovalent alkaryl radicals and monovalent cycloaliphatic radicals. As used herein, (meth)acrylic acid is intended to include acrylic acid and methacrylic acid. The water soluble **polymers** comprise at least 60 mole percent of the copolymerizable unsaturated carboxylic acid monomer, preferably from 60 to 87 mole percent, more preferably from 70 to 87 mole percent, and even more preferably from 75 to 85 mole percent. Preferred unsaturated carboxylic acid monomers are acrylic and methacrylic acid, more preferably acrylic acid.

These aforementioned **polymers** are described in U.S. Pat. No. 5,547,

- the group consisting of alkali metal or alkaline earth metal salts of **xylene** sulfonate or **cumene** sulfonate, wherein sodium **xylene sulfonate** is preferred.

The wax coated chlorine bleach compound contains 60 wt. % to 90 wt. % of the chlorine bleach compound and 10 wt. % to 40 wt. % of a wax which is coated onto the particles of the chlorine bleach compound thereby encapsulating the chlorine bleach compound within the wax coating.

Any chlorine bleach compound may be employed in the compositions of this invention, such as dichloroisocyanurate, dichlorodimethylhydantoin, or chlorinated TSP. The composition should contain sufficient chlorine bleach compound to provide about 0.2 to 4.0% by weight of available chlorine, as determined, for example, by acidification of 100 parts of the composition with excess hydrochloric acid. The preferred bleach is sodium dichloroisocyanurate dihydrate which is used at a concentration of 0.2% to

- isocyanurate dihydrate	20		
Formula B			
% of tablet	40%	20%	40%
Sodium tripolyphosphate 7% H.sub.2 O			
	16		16
sodium carbonate hydrate			
	16.68		16.68
Sodium disilicate 20% H.sub.2 O			
	8.90		8.90
Anhydrous sodium tripolyphosphate			
	40		
Anhydrous **sodium carbonate**	40		
Nonionic surfactant	0.875		0.875
Sodium **xylene sulfonate**			
	0.25		0.25
Paraffin wax		4	
Sodium dichloroisocyanurate dihydrate			
		16	

Formulas A and B were prepared by the following process.

The **powder** formulas used in this invention are made by mixing the individual ingredients and then coating with a mixture of the liquid nonionic surfactant, pigment or dye, and fragrance. F

----- 4753750

classes:1 510/338 1 510/304 1 510/321 1 510/325 1 510/343 1 510/413 1 510/418 1 510/467 1 510/506
score: 604

keywords: nonionic surfactant;separate;neodol;nonionic;laundry;liquid laundry;liquid;polystyrene;polyethylene;polypropylene;molecule;acidic;calcium;magnesium;builders;molecules;concentrations;anhydrous;silicate;perborate;hypochlorite;copper;soil;particulate;washing machines;washing;formulations;phosphate;derivativ

es;detergency;alkaline;alkyl ether;sodium salt;ethoxy;alkyl chain;sulfonated;sulfur;secondary;polyether;polystyrene;polyethylene;polypropylene;molecule;acidic;calcium;magnesium;builders;molecules;concentrations;anhydrous;silicate;perborate;hypochlorite;

- nd, as anti-settling agent: up to 5%, for example, in the range of 0.01 to 5%, such as about 0.05 to 2%, e.g. about 0.1 to 1%.

Suitable ranges of other optional detergent additives are: **enzymes**--0 to 2%, especially 0.7 to 1.3%; corrosion inhibitors--about 0 to 40%, and preferably 5 to 30%; anti-foam agents and suds-suppressors--0 to 15%, preferably 0 to 5%, for example 0.1 to 3%; thickening agent and dispersants--0 to 15%, for example 0.1 to 10%, preferably 1 to 5%; soil suspending or anti-redeposition agents and anti-yellowing agents--0 to 10%, preferably 0.5 to 5%; **colorants**, **perfumes**, brighteners and bluing agents total weight 0% to about 2% and preferably 0% to about 1%; pH modifiers and pH buffers --0 to 5%, preferably--0% to about 40% and preferably 0% to about 25%, for example 2 to 20%; bleach stabilizers and bleach activators 0 to about 15%, preferably 0 to 10%, for example, 0.1 to 8%; sequestering agent of high c

- 1-3.

For Alfonic 610-60, 5% addition was sufficient to inhibit gelation at 25.degree. C.; however, in the plot of viscosity vs. concentration of nonionic a sharp viscosity maximum was observed at about 67% concentration and a shoulder was observed at about 55% to 35% nonionic concentration. At 5.degree. C., 15% addition was necessary to avoid gel formation. The viscosity decreased to a minimum at a nonionic concentration of about 83% at all levels of additive addition at 5.degree. C whereas at the higher temperatures, viscosity minimums were observed for the non-diluted **formulation**s, i.e. 100% nonionic concentration At each temperature and for each tested concentration of additive (except at 20% additive at 25.degree. C.) a relatively sharp peak is seen in the viscosity existing between 75 to 50% concentration of nonionic (i.e. 25 to 50% dilution).

For ethylene glycol monoethyl ether 5% additive was capable of inhibiting gel

----- 6362156
classes:1 510/418 1 510/337 1 510/417 1 510/470 1 510/471
score: 596

keywords: dye;salting out;separate;neodol;nonionic;dishwashing;laundry;liquid laundry;liquid;unstable;transparent;electrolyte;dissolve;Alcohol Ethoxylate;Ethoxylate;Sodium Xylene;dimensions;polystyrene;polyethylene terephthalate;terephthalate;polyamides;polyethylene;polypropylene;polymers;enzymes;powder;molecule;xylene sulfonate;cumene;xylene;propylene glycol;virtue;formulation;heated;sodium borate;Sodium citrate;calcium;magnesium;lithium;builders;triethanolamine;monoethanolamine;molecules;anhydrous;stearate;silicate;citrate;soil;washing;quaternary;aliphatic substituents;substituents;straight chain;straight;aliphatic radical;amines;tertiary;heterocyclic;derivatives;synthetic detergents;Amphoteric;Cationic Surfactants;detergency;alkaline;Industries;methyl esters;olefin sulfonates;alpha olefin;olefin;Stepan;Anionic surfactants;alkylbenzene sulfonate;alkylbenzene;ethoxy sulfate;alkoxy sulfates;biodegradable;stearyl;alkyl diethoxy;alkyl ethoxy;alcohol sulfate;sodium salt;ethoxylated sulfate;potassium salts;alkyl poly;ethoxy;sulfonate salt;alkyl sulfonate;metal salts;alkyl chain;sulfonated;chain alkyl;branched chain;alkyl substituent;substituent;dioxide;sulfur;hydrocarbons;reacting;secondary alkyl;secondary;dodecyl benzene;dodecyl;benzene sulfonate;alkanolamide;fatty acid;alkyl polyether;polyether;alkyl sulfates;dissolve;Alcohol Ethoxylate;Ethoxylate;Sodium Xylene;dimensions;polystyrene;polyethylene terephthalate;terephthalate;polyamides;polyethylene;polypropylene;polymers;enzymes;powder;molecule;xylene sulfonate;cumene;xylene;propylene glycol;virtue;formulation;heated;sodium borate;Sodium citrate;calcium;magnesium;lithium;builders;triethanolamine;monoethanolamine;molecules;anhydrous;stearate;silicate;

- ndry applications. Preferably the alkaline material is selected from the group including alkali metal hydroxides, carbonates, bicarbonates, silicates, alkanolamines, and mixtures thereof. Preferred bases are selected from the group including **sodium hydroxide**, potassium hydroxide, **sodium carbonate**, potassium carbonate, sodium and potassium bicarbonates, **monoethanolamine**, **diethanolamine**, **triethanolamine**, silicates, metasilicates, disilicates and mixtures thereof.

Preferably, sufficient amount of the alkaline material is added to increase the pH to at least 9, more preferably 9.5, even more preferably 10, most preferably 10.5. After addition of the base, the gellan gum solution is preferably cooled to a temperature of lower than 80.degree. C., more preferably lower than 75.degree. C., most preferably lower than 70.degree. C.

Other ingredients of the liquid detergent composition may also promote

setting, for example, compounds comp
 e for
 polymers to be swollen; (2) adding nonionic components (particularly surfactant) and remaining water; and (3) subsequently adding any ionic components (including cationic or anionic surfactants or electrolytes).
 This third process is generally applicable to continuous type processes. In one embodiment, the liquids of the invention are used in combination with a transparent/translucent clear bottle.
 Clear bottle materials with which this invention may be used include, but are not limited to: **polypropylene** (PP), **polyethylene** (PE), polycarbonate (PC), **polyamides** (PA), **polyethylene terephthalate** (PETE), polyvinylchloride (PVC) and/or **polystyrene** (PS).
 The transparent container according to the invention preferably has a transmittance of more than 25%, more preferably more than 30%, more preferably more than 40%, more preferably more than 50% in the visible part of the spectrum (approx. 410-800 nm).
 Alternatively, absorbency of bottle

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 classes:1 510/321 1 510/108 1 510/393 1 510/506
 score: 554

keywords: nonionic surfactant;salting out;nonionic;liquid;electrolyte;Alcohol Ethoxylate;Ethoxylate;polymers;enzymes;molecule;benzene sulphonate;ethanol;hydrotropes;acidic;dispersion;heated;sodium carbonate;Sodium citrate;calcium;builders;triethanolamine;hydroxide;citrate;carbonate;bromide;soil;stain;washing;phosphate;amines;tertiary;Amphoteric;detergency;alkaline;olefin;Anionic surfactants;potassium salts;alkyl polyethoxy;metal salts;alkyl chain;reacting;secondary;soaps;fatty acid;Alcohol Ethoxylate;Ethoxylate;polymer s;enzymes;molecule;benzene sulphonate;ethanol;hydrotropes;acidic;dispersion;heated;sodium carbonate;Sodium citrate;calcium;builders;triethanolamine;hydroxide;

- eady mentioned, a number of optional ingredients may also be present, for example lather boosters such as alkanolamides, particularly the monoethanolamides derived from palmkernel fatty acids and coconut fatty acids, fabric softeners such as clays, amines and amine oxides, lather depressants, inorganic salts such as sodium sulphate, and, usually present in very minor amounts, fluorescent agents, **perfumes**, and colourants.
 Other conventional materials may also be present in the liquid detergent compositions of the invention, for example soil-suspending agents, **hydrotropes**, corrosion inhibitors, dyes, **perfumes**, silicates, optical brighteners, suds boosters, suds depressants, germicides, anti-tarnishing agents, opacifiers, fabric-softening agents, buffers and the like.
 The compositions of the invention may optionally contain the polyhydroxy compounds disclosed in CA 1092036, but it is pointed out that such materials are not essential to the invention. Examples of such polyhydroxy compounds are diols such as 1,2-propanediol, ethylene glycol, erythritol and polyols such as glycerol, sorbitol and manitol. Preferably the amount of glycerol is less than 10%, more preferred less than 5% most preferred less than 3% especially preferred are compositions which are substantially free from glycerol.
 Other enzyme stabilizing materials may also be present, to provide still further stabilisation, such as **calcium salts**, alkanolamines, sulphites, low molecular weight carboxylic acids (eg. formate), fatty acids, glycine and/or cross-linked polyacrylates.
 The amount of water in the composition is preferably more than 5% such as from 10 to 70% by weight.
 In use, the liquid detergent compositions are generally diluted with water, and subsequently fabrics are treated with the aqueous liquor. Preferably, the aqueous liquor comprises less than 5%, more preferably between 0.2 and
 - ing fabrics, comprising the step of contacting said fabrics with an aqueous liquor comprising an aqueous liquid detergent composition according to claim 1.

Description

The invention will be illustrated by means of the following examples:

EXAMPLES I TO III

(i) Preparation of glyceryl ether surfactant

280 g of SYNPROL (a commercial mixture of C.sub.13 and C.sub.15 primary alcohols - ex ICI) was **heated** to 80.degree. C. in the presence of 0.8 ml of antimony pentachloride. 270 g of ethylene oxide was led into the mixture by means of a gas inlet tube. When the reaction was complete the

gas inlet tube was replaced by a dropping funnel and 125 g of epichlorohydrin was added over 4 hours. After cooling, the mixture was dissolved in 2 liters ether and 90 g of **powder**ed potassium hydroxide was added and the mixture was stirred for 3 hours at room temperature. After filtering, the solvent was removed under vacuum, 400 g of acetic anhydride

- an with charcoal to remove colour, filtered and the solvent removed to yield 465 g of the glycerol terminated alcohol ethoxylate of the approximate formula:
 $\text{RO}(\text{C.sub.2 H.sub.4 O})\text{.sub.x CH.sub.2 CH(OH)CH.sub.2 OH}$
 where x is between 4.0 and 4.5. This material is designated S-4G in the following tests.

Compositions According to the Invention

Compositions were prepared, using standard mixing techniques, according to the following table.

Example No:	1	2	3
Ingredients (wt %)			
S-4G	10.5	21.0	20.0
LAS.sup.1	10.0	3.6	3.4
Prifac.sup.2	--	5.4	5.1
triethanolamine	2.0	2.0	1.9
Sodium citrate	7.0	3.0	2.9
Borax	3.0	3.0	2.9
Sodium **toluene**sulphonate			
	4.0	--	--
ethanol	--	5.0	4.8
Savinase (Gu/mg) 1			

- he alkyl chain, on average 4.5 ethoxy groups attached to the chain and one glycerol group terminating the **molecule**.

For comparison, a nonionic material C.sub.13.6 EO.sub.7 was used as the nonionic material, and also C.sub.13.6 EO.sub.11 was used as the nonionic material.

The results of the tests are given in FIGS. 1a, 1b and 1c which show the area wherein stable lamellar systems are formed. From these figures it is clear that the use of a nonionic according to the invention, provides more flexibility to formulate the composition in order to obtain a stable active-structured composition. Especially the use of high levels of nonionic materials at relatively low levels of electrolyte provides only lamellar compositions when using nonionic material according to the invention.

EXAMPLES V-VIII

Dobanol 91 (a commercially available mixture of C.sub.8 to C.sub.12 alcohols, ex Shell) was treated with ethylene oxide followed by epic